

REMARKS

Claim status

With this Response, claims 45 and 86-89 are canceled. The dependency of claim 46 is amended as a result of the cancellation of claim 45. No new matter is added, and no further searching should be warranted. After entry of these amendments, claims 40, 42-44, 46, 47, 49-62 and 85 are pending and presented for examination.

Applicant specifically reserves the right to pursue the subject matter of the canceled or amended claims in a related application. Each of the objections and rejections levied in the Office Action is addressed individually below.

Claim Objections

Claims 86-89 are objected to under 37 C.F.R. § 1.75 as being substantial duplicates of claims 59-62. Claims 86-89 are canceled thereby rendering the objection moot.

Rejections under 35 U.S.C. § 103(a) for obviousness

Claims 40, 42-47, 49-62 and 85-89 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the sole lost count of Patent Interference No. 105,406 ("lost count") in view of U.S. Patent No. 6797313 ("Fritzemeier") and U.S. Patent No. 6172009 ("Smith").

The pending claims recite a method of producing an oriented oxide superconducting film. The claimed methods include a step of converting a precursor metal oxyfluoride film into the oxide superconductor film in a processing gas having a **total pressure of less than about 8 Torr.**

In comparison, the lost count recites:

143. A method of forming a film of crystalline $\text{YBa}_2\text{Cu}_3\text{O}_7$ comprising:
forming a precursor film comprising barium (Ba), fluorine (F), yttrium (Y) and copper (Cu);
heat-treating said precursor film at a temperature above about 700° C **in the presence of oxygen and water vapor at a sub-atmospheric pressure** to form a crystalline structure; and
annealing said crystalline structure in the presence of oxygen.

As acknowledged by the Examiner, **atmospheric pressure corresponds to 760 Torr.** The lost count therefore discloses a method which is performed **in the presence of oxygen and water vapor at less than 760 Torr.** The Examiner asserts that “the values of less than 8, 1, 0.1, 0.01, and 0.001 Torr recited in claims 40 and 42-46 lie inside the range of sub-atmospheric pressure (i.e., less than 760 torr)”, which renders the claims *prima facie* obvious.

While the broad pressure range of the lost count (less than 760 Torr) may well encompass the claimed ranges (less than about 8, 1, 0.1, 0.01, and 0.001 Torr), the Examiner is reminded that “[...] if the reference’s disclosed range is **so broad as to encompass a very large number of possible distinct compositions**, this might present a situation analogous to the obviousness of a species when the prior art broadly discloses a genus.” See MPEP § 2144.05 citing to *In re Baird* 16 F.3d 380 (Fed. Cir. 1994) and referring to MPEP § 2144.08 which makes clear that a species or sub-genus is not necessarily *prima facie* obvious in view of a prior art genus. Applicant respectfully submits that the facts in this case correspond to such a situation. Indeed, the cases that are referenced in MPEP § 2144.05 involved situations with narrow prior art ranges and/or prior art ranges that were very similar to claimed ranges. Thus, in *Woodruff*¹ the court found that a narrow prior art range of “about 1-5%” was enough to create a *prima facie* case of obviousness for an overlapping and broad range of “more than 5%.” In *Geisler*², the court found that a prior art range of “less than about 100 Angstroms” was enough to create a *prima facie* case of obviousness for a very similar range of “50 to 100 Angstroms”. Here, the prior art range (less than 760 Torr) is extremely broad and quite different from the claimed ranges (less than about 8, 1, 0.1, 0.01, and 0.001 Torr). Absent some relevant secondary teachings, Applicant respectfully submits that the significant differences between these ranges are therefore not *prima facie* obvious.

Besides, even if we assume for the sake of argument that the Examiner has established a *prima facie* case of obviousness based on overlapping ranges, Applicant can still rebut the presumption by showing *inter alia* that the prior art taught away from the claimed invention. See MPEP § 2144.05 citing *Iron Grip Barbell Co., Inc. v. USA Sports, Inc.*, 392 F.3d 1317, 1322 (Fed. Cir. 2004). In this context, we note that the Examiner cites Fritzemeier as a secondary reference and states that it teaches methods in which “the precursor film is heated in an

¹ *In re Woodruff*, 919 F.2d 1575 (Fed. Cir. 1990).

² *In re Geisler*, 116 F.3d 1465, 1469-71 (Fed. Cir. 1997).

atmosphere at a partial pressure of 5-50 Torr of water vapor and a partial pressure of 0.1-760 Torr of oxygen [...]” (see, Office Action, page 7 citing columns 15-16 of Fritzemeier). The Examiner seems to take the position that these **partial** water and oxygen pressure ranges somehow combine to render obvious the claimed **total** pressure ranges of less than about 8, 1, 0.1, 0.01, and 0.001 Torr. Applicant respectfully disagrees and notes that Fritzemeier explicitly teaches these **partial** pressures in the context of a **total pressure of about 760 Torr** (see column 15, lines 39-45):

In certain embodiments, formation of barium fluoride involves heating the dried solution from about room temperature to about 200C at a rate of about 5C per minute in a **nominal gas environment having a total gas pressure of about 760 torr**, and containing from about five torr to about 50 torr of water and from about 0.1 torr to about 760 torr of oxygen, with the **balance inert gas (e.g., nitrogen, argon)**.

Fritzemeier emphasizes this in column 16, lines 45-50:

The gas environment in the furnace can have, for example, a **total gas pressure of about 760 Torr**, a predetermined partial pressure of water vapor (e.g. at least about 10 Torr, at least about 15 Torr, at most about 25 Torr, at most about 20 Torr, about 17 Torr) with the **balance being molecular oxygen**.

and again in column 17, lines 5-11:

The coated metal salt solution can be deposited in an atmosphere containing H₂O (e.g., from about 5 torr H₂O to about 15 torr H₂O, from about 9 torr H₂O to about 13 torr H₂O, about 11 torr H₂O). The **balance of the atmosphere can be an inert gas (e.g., nitrogen)**. The **total pressure during film deposition can be, for example, about 760 torr**.

In light of these explicit teachings, Applicant fails to see how the person skilled in the art would choose to use a total pressure of less than about 8 Torr based on Fritzemeier (let alone a total pressure of less than about 1, 0.1, 0.01, or 0.001 Torr). In fact, Applicant respectfully submits that by only ever referring to a total pressure of about 760 Torr, Fritzemeier **teaches away** from the claimed ranges. As noted above, Applicant can rebut a presumption of obviousness by showing that the prior art taught away from the claimed invention.

The Examiner also cites Smith as a secondary reference; however, the Examiner only cites Smith as providing teachings that “a superconductor comprises c-axis epitaxy for the purpose of providing high Jc value” (see, Office Action, page 6). The Examiner does not point to any teachings in Smith relating to pressures, let alone total pressures. For at least this reason, the citation of Smith fails to remedy the aforementioned deficiencies in the other cited references.

On pages 4-5 of the Office Action, the Examiner discusses other limitations that are found in the claimed methods and on several occasions relies on the specification of U.S. Patent Publication Nos. 2005/0014652 (“the ‘652 publication”) or 2004/0171494 (“the ‘494 publication”) to provide a **prior art** teaching. For example, on page 5, the Examiner states that:

“[i]t is well known in the art to remove HF from the surface as **recognized throughout the specification of the lost count**. Specifically, HF is evolved through the process of heating at the temperature (700C) in the atmosphere (presence of oxygen and water) set forth in the lost count. As HF is produced inherently in the subject matter of the lost count, **one of ordinary skill in the art would recognize that the HF must be removed in order to produce high quality YCBO (paragraph 0055, 2005/00014652)**. Additionally, **reduced HF content within the oxyfluoride film may favor c-axis texturing (paragraph 0058, 2005/0014652)**. Because the invention is directed to forming a crystalline YCBO at a low pressure, one of ordinary skill in the art would recognize that **it would at least be obvious to remove HF from the substrate in order to provide a high quality YCBO with the desired orientation**. Additionally, the specification indicates that there are a number of ways to remove HF from the substrate surface including **lowering the ambient pressure in the furnace**.” (emphasis added)

Applicant respectfully submits that it is improper for the Examiner to rely on the specifications of the ‘652 and ‘494 publications for **prior art** teachings because they both correspond to the specification of the sole count³. Unless the language of the lost count is ambiguous, the courts have established that it is improper to resort to the specification from which a count originated. Besides, even if a term of the lost count is found to be ambiguous, the underlying specification can then only be consulted to **construe the meaning of the ambiguous term**. See, e.g., *Noelle v. Lederman*, 355 F.3d 1343, 1350-51 (Fed. Cir. 2004); *Reece v. Hurst*, 661 F.2d 1222, 1236 (C.C.P.A. 1981). Thus, even if the Examiner feels that a term of the sole

³ The sole count was taken from U.S. Serial No. 10/799436 which was published as the ‘652 publication. U.S. Serial No. 10/799436 was a continuation of U.S. Serial No. 10/194561. U.S. Serial No. 10/799388 was another continuation of U.S. Serial No. 10/194561 and was published as the ‘494 publication.

count is ambiguous, he should not rely on the underlying specification to provide teachings or limitations that are unrelated to construing the meaning of the ambiguous term.

For all the reasons set forth above, Applicant respectfully submits that the claimed methods are not obvious in view of teachings of the lost count together with the teachings of Fritzemeier and/or Smith. Applicant therefore respectfully requests that the rejection under 35 USC § 103(a) be withdrawn.

Conclusion

Applicant would like to thank the Examiner for his time and consideration of this case. If a further telephone conversation would help clarify any issues, or help expedite allowance of this case, Applicant invites the Examiner to contact the undersigned at (617) 248-4793.

No fee is believed to be due. To the extent that there are any discrepancies between what Applicant has paid with this paper and what the USPTO believes is owed, please apply any charges or credits to deposit account 03-1721, referencing Attorney Docket No. 0492611-0545. Applicant respectfully requests that a Notice be issued explaining any such discrepancy.

Respectfully submitted,

Dated: March 31, 2010

/Charles E. Lyon/
Charles E. Lyon, D.Phil., J.D.
Registration No. 56,630

CHOATE. HALL & STEWART, LLP
Two International Place
Boston, MA 02110
Phone: (617) 248-4793
Fax: (617) 502-5002
clyon@choate.com